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ED27-CDL-FOP-003
Baseline
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FACILITY OPERATING PROCEDURE

ED27 / MODAL AND CONTROL DYNAMICS TEST TEAM

HP3566/PC DATA ACQUISITION FOR DYNAMIC TESTS

CHECK THE MASTER LIST—
VERIFY THAT THIS IS THE CORRECT VERSION BEFORE USE

DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		2-20-98	Document number ED73-CDL-FOP-003
Baseline	Draft 1	8-2-99	Changes in document numbers to accommodate reorganization and integrated document system.

1. INTRODUCTION

1.1 Scope This document is applicable to the data acquisition requirements for the HP3566 analyzer software as it applies to a personal computer (PC) and the HP3566 system for data acquisition. The required test documentation and pre-test checks are also addressed.

1.2 Purpose The purpose of this procedure is to define the steps necessary to set-up the PC and HP3566 systems for data acquisition of a dynamic test. This procedure will be used to assist in defining all necessary system inputs and pre-test checks.

1.3 Applicability This procedure applies to the PC and HP3566 systems used in the performance of dynamic testing within the Modal and Control Dynamics Test Team, ED27.

2. REFERENCE DOCUMENTS

Associated Equipment Manuals

HP 3566A/3567A Operating Reference

3. DEFINITIONS

3.1 HP3566 Analyzer Software A software package run on a PC, desktop or laptop, used to provide input excitation signals, acquire measured responses, and store dynamic data in the time or frequency domains.

3.2 Test Set-up Sheet A form used to record critical test parameters and information. A sample form appears in appendix A.

3.3 Pre-test Condition Check List A check list used to assure that the proper pre-test conditions exist before a test is conducted. A sample form appears in appendix B.

4. INSTRUCTIONS

4.1 HP3566 Analyzer Set-up This procedure describes the methods used to set-up the HP3566 analyzer for data acquisition.

4.1.1 Verify that all dynamic test instrumentation has been set-up and calibrated; with all transducer identifications, calibrations, point numbers and locations identified.

4.1.2 Boot up the PC.

4.1.3 Activate the HP3566 analyzer software package by double clicking on the analyzer icon.

4.1.4 Enter the appropriate data acquisition set-up parameters (measurement state) for a particular test and data set (48 channels of data per data set). The HP3566 analyzer package is set-up to allow editing of data acquisition set-up parameters through a menu mode of operation. A sample data acquisition set-up parameter flow diagram is shown in appendix B.

4.1.5 For each data set, load the appropriate data point and channel numbers.

4.1.6 Measurement states should be saved once completed, and the full project should be archived at the end of each day of testing.

4.1.7 A HP3566 measurement state file will be developed and stored for each data set (A,B,C…) until all transducers are accounted for.

4.2 Pre-test Check & Data Acquisition This procedure describes the methods used to check pre-test set-ups and acquire test data.

4.2.1 Data will be acquired one set at a time. Load the corresponding HP3566 measurement state for the present data set into the analyzer software system for data acquisition.

4.2.2 Attach the excitation source(s) and complete the Test Set-up Sheet found in appendix A.

4.2.3 Print out the HP3566 measurement state set-up parameters and begin the Pre-test Condition Check List found in appendix B.

4.2.4 Activate the excitation source and begin the channel auto-ranging sequence for the analyzer. Once channel auto-ranging has been completed, begin data acquisition.

4.2.5 Once data has been acquired for a measurement set, store the corresponding functions.

4.2.6 Repeat the above sequence from 4.2.1 for each measurement set until a complete test set has been acquired.

5. QUALITY RECORDS

5.1 Test Set-up Sheet The Test Set-up Sheet shown in appendix A should be filled out for every test. The test set-up sheet will be included in the test report.

5.2 HP3566 Measurement State Set-up Parameter Print Out Print out of the set-up parameters from section 4.2.3. The measurement state print out will be included in the test report.

APPENDIX A

SAMPLE
TEST SETUP SHEET
Sine Sweep

TEST ID NO: _____ **DATE:** _____

TEST NO: _____

TEST TECHNIQUE: _____

DATA ACQUISITION HARDWARE/SOFTWARE: _____

DRIVE POINT INFORMATION

(DRIVE PT, DIR)	SERIAL #	CAL. (mV/LB)	AMP	ANALYZER CAL. (V/EU)

RESPONSE POINT INFORMATION

(DRIVE PT, DIR)	SERIAL #	CAL. (G/V)	AMP	ANALYZER CAL. (V/EU)

SHAKER DRIVE SIGNAL

RUN	FREQUENCY CONTENT	FILTER BAND-PASS	FORCE LBS PEAK	STORAGE TITLE
1.				
2.				
3.				
4.				
5.				

APPROVED: _____ **APPROVED:**_____
DYNAMICS ENGINEER TEST ENGINEER(ED27)

CONCURRENCE: _____
R&QA REPRESENTATIVE

REMARKS:

SAMPLE
TEST SETUP SHEET
Random

TEST ID: _____ **DATE: _____**

TEST TECHNIQUE: _____

FREQUENCY RANGE: _____

BAND-PASS FILTER RANGE: _____ **NO. OF AVERAGES: _____**

DATA ACQUISITION HARDWARE: _____

DATA ACQUISITION SOFTWARE: _____

REFERENCE/DRIVE INFORMATION

REFERENCE	(PT, DIR)	SERIAL #	CAL. (mV/LB)	AMP	FORCE (LB RMS)
1.					
2.					
3.					

APPROVED: _____ **APPROVED:_____**
DYNAMICS ENGINEER TEST ENGINEER(ED27)

CONCURRENCE: _____
R&QA REPRESENTATIVE

REMARKS:

APPENDIX B

SAMPLE

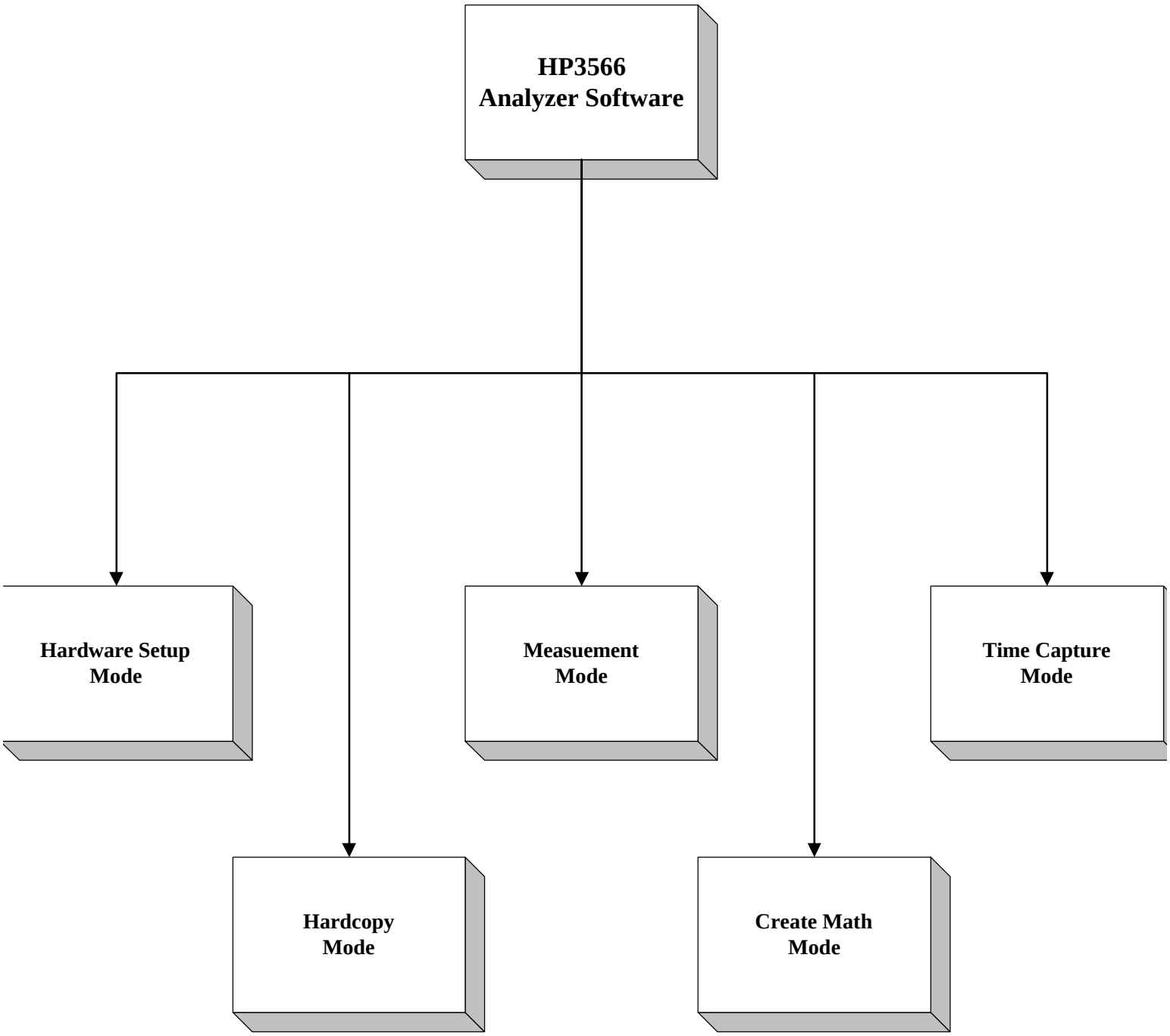
PRE-TEST CONDITION

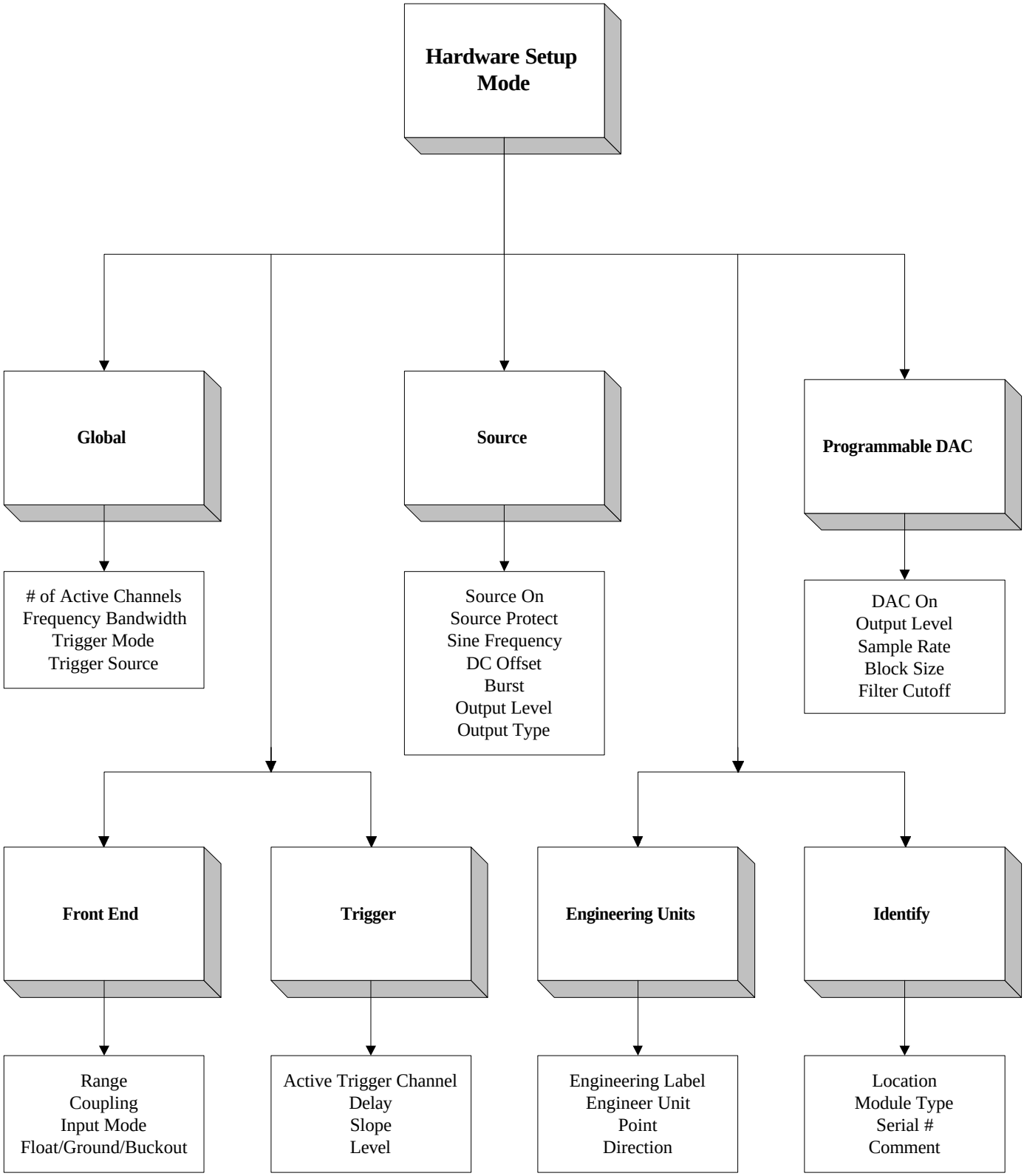
CHECK LIST

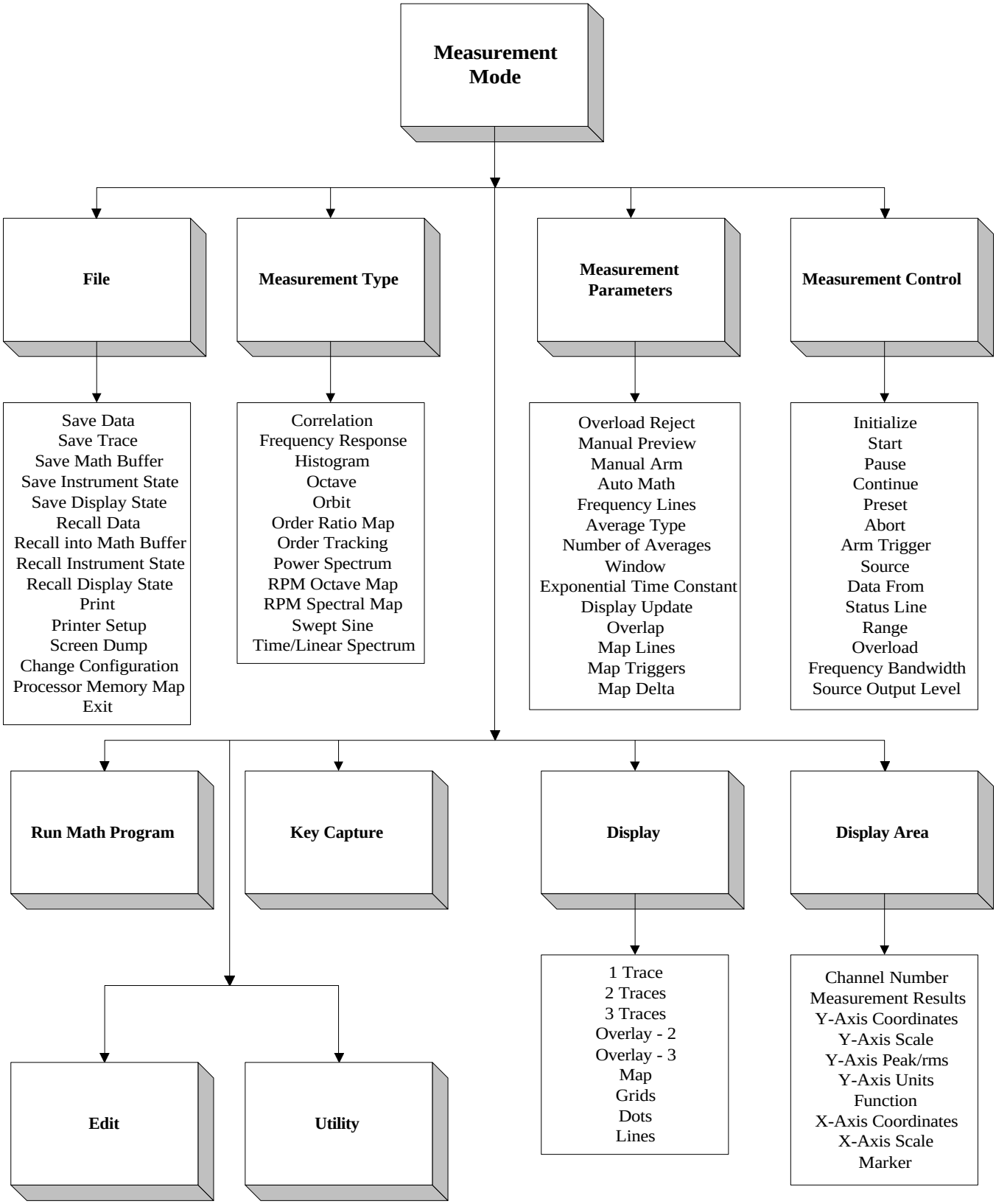
TEST IDENTIFICATION: SET:

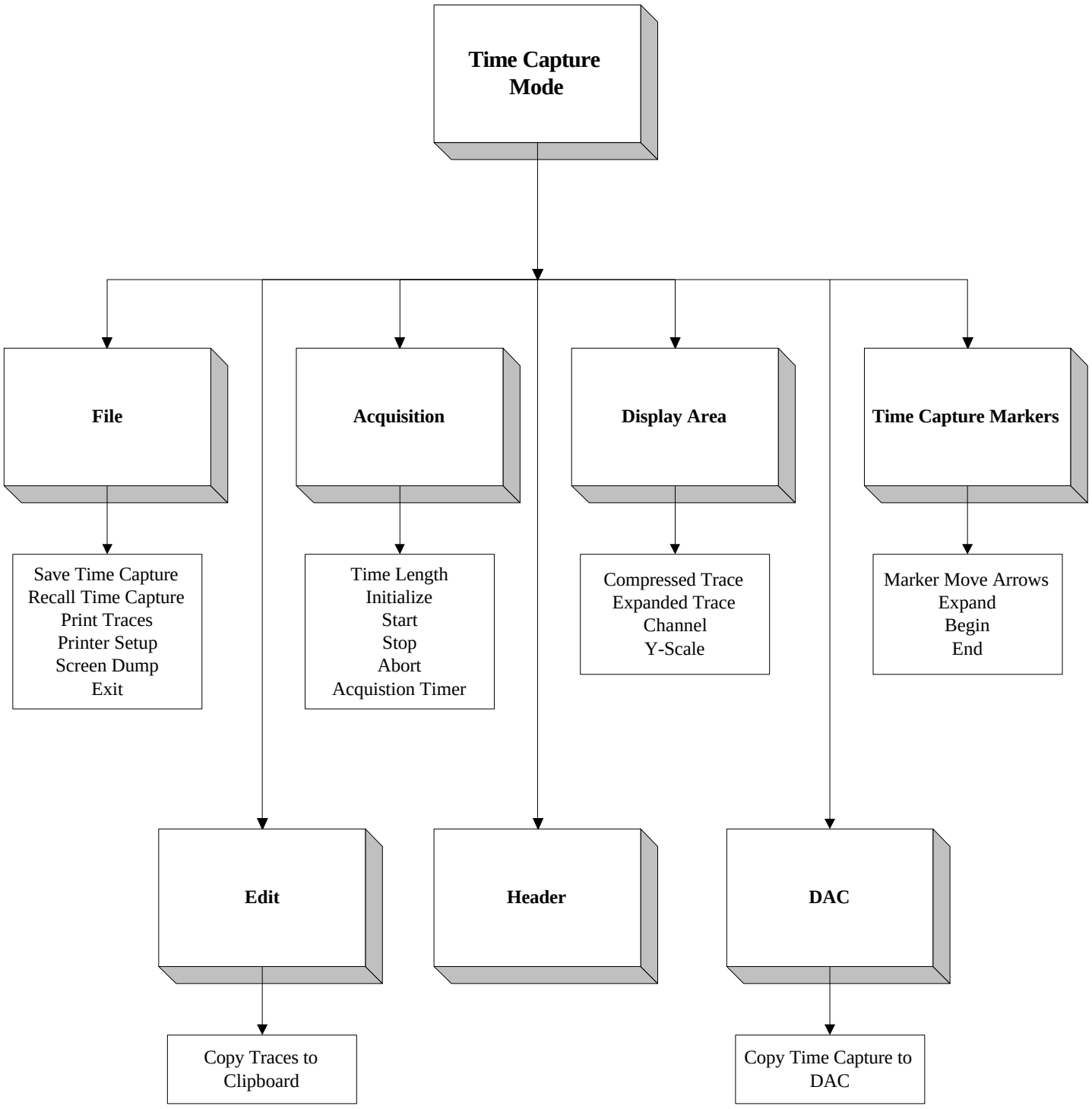
LOAD CELL CHARGE AMPS CONTINUITY & SETTING	_____
SIGNAL CONDITIONER LIGHTS FOR CONTINUITY	_____
CABLES ATTACHED FOR CURRENT SET	_____
FRONT END CABLED & CUT-OFF FREQ. SET	_____
EXCITATION SIGNAL BAND-PASS FILTER SETTING	_____
SHAKER AMPS ON	_____
PROPER HP3566 MEASUREMENT STATE ACTIVE	_____
EXCITATION SIGNAL FREQUENCY CONTENT	_____
EXCITATION SIGNAL TYPE	_____
EXCITATION FORCE LEVEL	_____
RANGE AND GAIN SETTINGS ARE COMPLETE	_____
NOTE DATE/TIME & START DATA ACQUISITION	_____

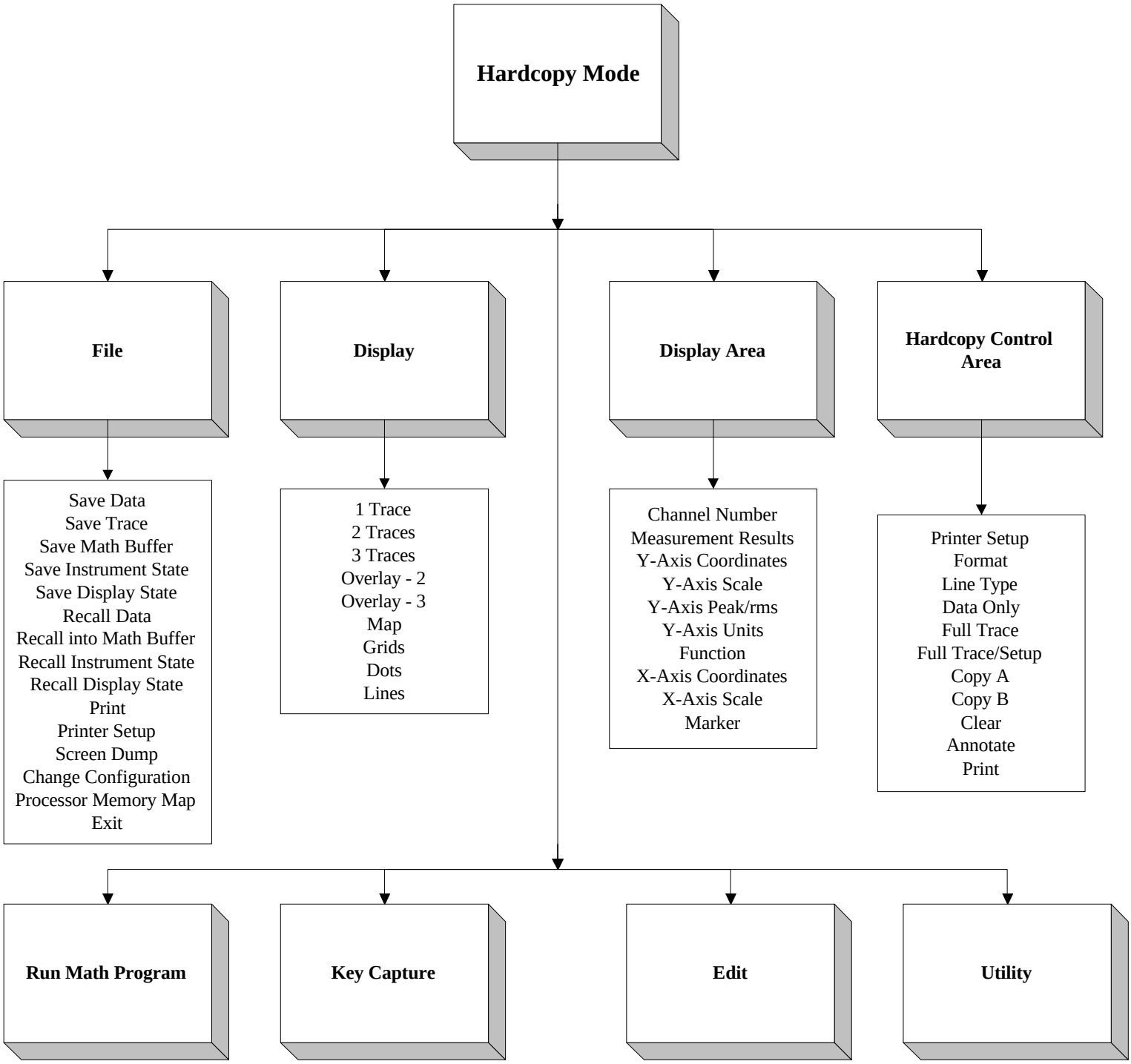
Sample
HP3566/PC
Measurement Process Flow

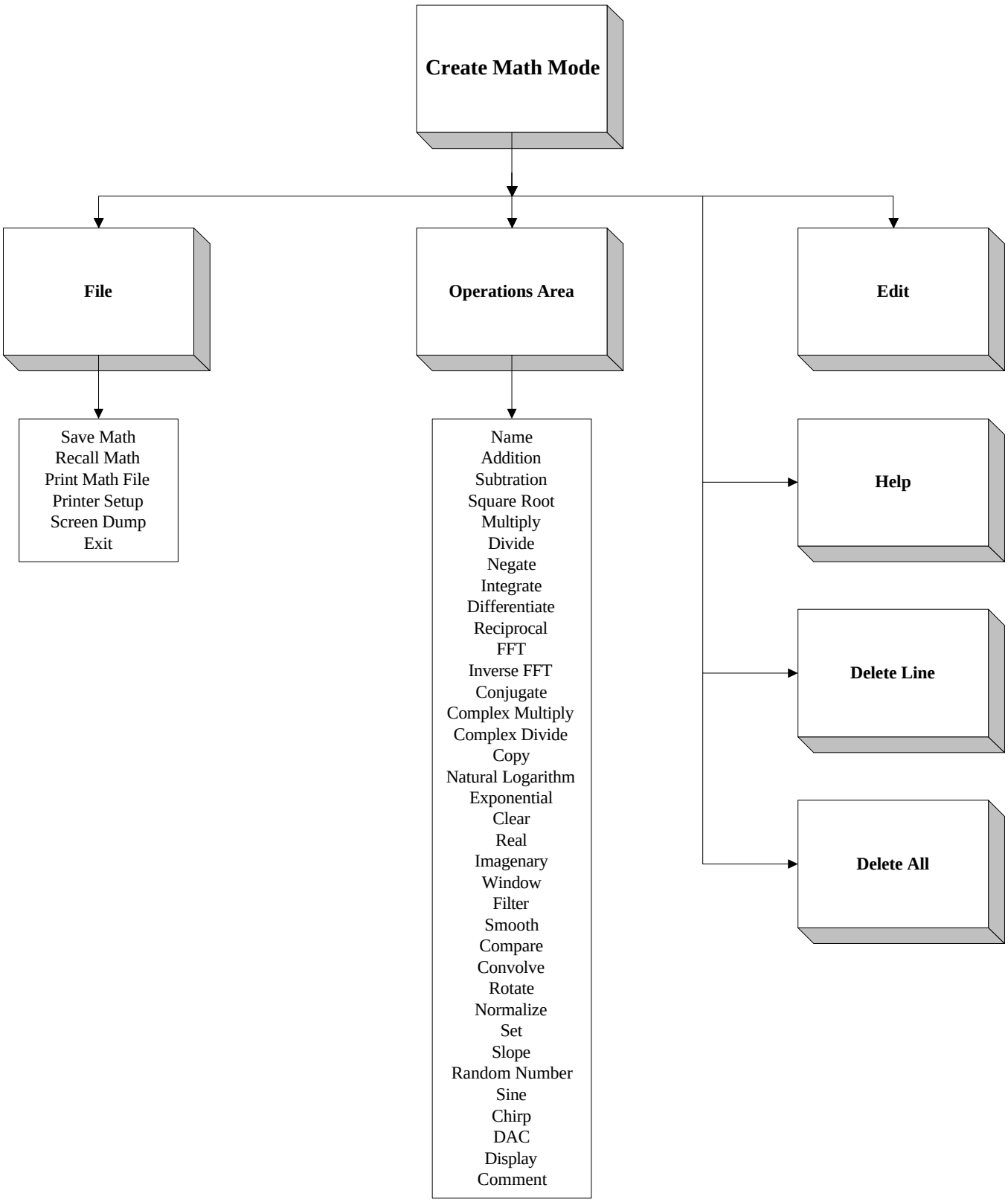



Hardware Setup Mode
Global
Source
Programmable DAC
# of Active Channels
Frequency Bandwidth
Trigger Mode
Trigger Source
Source On
Source Protect
Sine Frequency
DC Offset
Burst
Output Level
Output Type
DAC On
Output Level
Sample Rate
Block Size
Filter Cutoff
Front End
Trigger
Engineering Units
Identify
Range
Coupling
Input Mode
Float/Ground/Buckout
Active Trigger Channel
Delay
Slope
Level
Engineering Label
Engineer Unit
Point
Direction
Location
Module Type
Serial #
Comment


Measurement Mode
File
Measurement Type
Measurement Parameters
Measurement Control
Save Data
Save Trace
Save Math Buffer
Save Instrument State
Save Display State
Recall Data
Recall into Math Buffer
Recall Instrument State
Recall Display State
Print
Printer Setup
Screen Dump
Change Configuration
Processor Memory Map
Exit
Correlation
Frequency Response
Histogram
Octave
Orbit
Order Ratio Map
Order Tracking
Power Spectrum
RPM Octave Map
RPM Spectral Map
Swept Sine
Time/Linear Spectrum
Overload Reject
Manual Preview
Manual Arm
Auto Math
Frequency Lines
Average Type
Number of Averages
Window
Exponential Time Constant
Display Update
Overlap
Map Lines
Map Triggers
Map Delta
Initialize
Start
Pause
Continue
Preset
Abort
Arm Trigger
Source
Data From
Status Line
Range
Overload
Frequency Bandwidth
Source Output Level
Run Math Program
Key Capture
Display
Display Area
Edit
Utility
1 Trace
2 Traces
3 Traces
Overlay - 2
Overlay - 3
Map
Grids
Dots
Lines
Channel Number
Measurement Results
Y-Axis Coordinates
Y-Axis Scale
Y-Axis Peak/rms
Y-Axis Units
Function
X-Axis Coordinates
X-Axis Scale
Marker


Time Capture Mode
File
Acquisition
Display Area
Time Capture Markers
Save Time Capture
Recall Time Capture
Print Traces
Printer Setup
Screen Dump
Exit
Time Length
Initialize
Start
Stop
Abort
Acquistion Timer
Compressed Trace
Expanded Trace
Channel
Y-Scale
Marker Move Arrows
Expand
Begin
End
Edit
Header
DAC
Copy Traces to Clipboard
Copy Time Capture to DAC


Hardcopy Mode
File
Display
Display Area
Hardcopy Control Area
Save Data
Save Trace
Save Math Buffer
Save Instrument State
Save Display State
Recall Data
Recall into Math Buffer
Recall Instrument State
Recall Display State
Print
Printer Setup
Screen Dump
Change Configuration
Processor Memory Map
Exit
1 Trace
2 Traces
3 Traces
Overlay - 2
Overlay - 3
Map
Grids
Dots
Lines
Channel Number
Measurement Results
Y-Axis Coordinates
Y-Axis Scale
Y-Axis Peak/rms
Y-Axis Units
Function
X-Axis Coordinates
X-Axis Scale
Marker
Printer Setup
Format
Line Type
Data Only
Full Trace
Full Trace/Setup
Copy A
Copy B
Clear
Annotate
Print
Run Math Program
Key Capture
Edit
Utility


Create Math Mode
File
Operations Area
Edit
Save Math
Recall Math
Print Math File
Printer Setup
Screen Dump
Exit
Name
Addition
Subtration
Square Root
Multiply
Divide
Negate
Integrate
Differentiate
Reciprocal
FFT
Inverse FFT
Conjugate
Complex Multiply
Complex Divide
Copy
Natural Logarithm
Exponential
Clear
Real
Imagenary
Window
Filter
Smooth
Compare
Convolve
Rotate
Normalize
Set
Slope
Random Number
Sine
Chirp
DAC
Display
Comment
Help
Delete Line
Delete All